

A new gigantic species of *Zeidora* Adams, 1860 from Antarctic waters (Gastropoda: Fissurellidae)

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ABSTRACT

A new species of *Zeidora*, *Z. antarctica* new species, is described from Bellingshausen Sea, Antarctica. The species is characterized by having a large and low shell, with delicate shell sculpture, spire extending beyond the shell's outline, and relatively wide septum, curved at the anterior margin.

Additional keywords: Bellingshausen Sea, Southern Ocean

INTRODUCTION

To date, 14 Recent species of *Zeidora* are known around the world, most of them remaining poorly known and based only on shell morphology (Geiger, 2006). Of these species, eight are known from the northern hemisphere, in the Caribbean (*Zeidora naufraga* Watson, 1883; *Z. bigelowi* Pérez-Farfante, 1947; *Z. neritica* Espinosa, Ortea, and Fernández-Garcés, 2004; and *Z. milerai* Espinosa, Ortea, and Fernández-Garcés, 2004), Japan (*Z. calceolina* A. Adams, 1860; *Z. reticulata* A. Adams, 1862), Panama [*Z. flabellum* (Dall, 1896)], and the Red Sea [*Z. nesta* (Pilsbry, 1890)]; and six species from the southern hemisphere, from Galapagos Islands [*Z. galapagensis* (McLean, 1970)], Easter Island (*Z. bahamondei* Rehder, 1980), Australia [*Z. lodderae* (Tate and May, 1900), *Z. legrandi* Tate, 1894, and *Z. tasmanica* (Beddome, 1883)], and New Zealand (*Z. maoria* Powell, 1936). Tate and May (1901) regarded *Zeidora legrandi* as a junior synonym of *Z. tasmanica*; and Kuroda et al. (1971) and Kilburn (1978) reported *Z. reticulata* as a synonym of *Z. calceolina*, although this opinion was not shared by Herbert (1987).

In this paper, a new species of *Zeidora* from the Bellingshausen Sea, Antarctica, is described. The material reported here was collected during the BENTART Expedition (Spanish Antarctic Program) aboard the R/V HESPERIDES, using an Agassiz trawl; and was deposited at the Museo de Historia Natural de Madrid (MNCN), Spain. For comparative purposes the collection of The Natural History Museum (NHMUK), London was studied, examining the types of *Zeidora naufraga* Watson, 1883 (holotype: NHMUK 1887.2.9.128), *Z. maoria* Powell, 1936 (2 syntypes: NHMUK 1962954/1-2), and *Z. reticulata* A. Adams, 1862 (holotype and another specimen: NHMUK 1878.1.28.150).

SYSTEMATICS

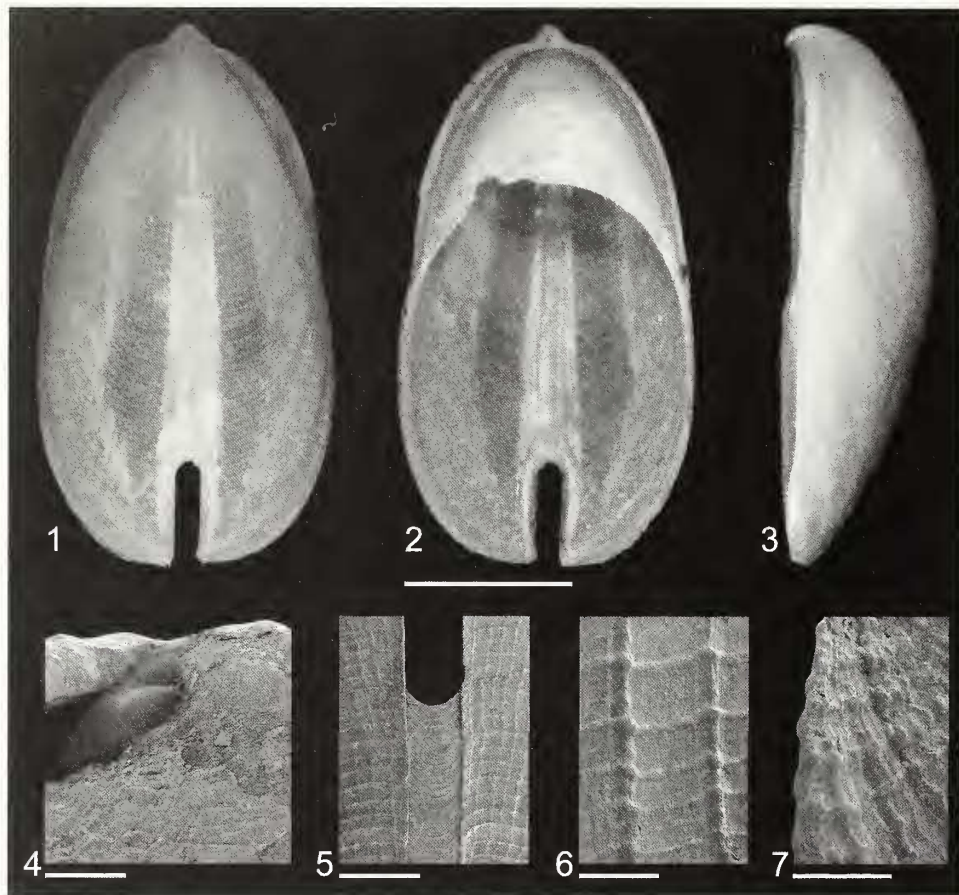
Family Fissurellidae Fleming, 1822
Genus *Zeidora* A. Adams, 1860

Type Species: *Zeidora calceolina* A. Adams, 1860 (by monotypy)

Zeidora antarctica new species
(Figures 1–8)

Diagnosis: Shell large, ovately elongated, low; spire posteriorly located, extending beyond shell's outline. Shell surface with delicate reticulate sculpture. Septum relatively wide, one-fourth total shell length, with anterior margin markedly curved.

Description: Shell large (16.2 mm length in the holotype), with high expansion whorl rate, whitish, delicate, translucent. Spire of 1¼ whorls, located on posteroventral margin, extending beyond shell outline. Protoconch of one whorl, 150 µm in diameter, planorboid,



Figures 1–7. Holotype of *Zeidora antarctica* new species (MNCN 15.05/53569). **1.** Dorsal view. **2.** Ventral view. **3.** Lateral view. **4.** Protoconch. **5.** Selenizone and slit. **6.** Detail of shell sculpture. **7.** Crenulations of postero-ventral margin. Scale bars: Figures 1–3 = 5 mm; 4 = 100 μ m; 5 = 1 mm; 6 = 200 μ m; 7 = 500 μ m.

slightly twisted to right (Figure 4). Last whorl strongly elongated, ovate, narrow in outline (width / length ratio = 0.55), low (height / length ratio = 0.29) (Figures 1–3). Base with widely curved lateral margins; posterior margin short, almost straight; anterior margin gently curved (Figure 2). Selenizone extending along entire teleoconch whorl, relatively wide, sculptured with distinct commarginal ribs, surrounded by narrow keels (Figures 1, 5). Slit open, with margins parallel, wide and short (1/5 total shell length). Shell surface sculptured with about 80 primary radial ribs, crossed by \sim 100, almost equally developed, commarginal ribs. Intersection of radial and commarginal ribs producing small nodules and squarish interspaces (Figure 6). Between primary ribs, microscopic (secondary) radial and commarginal threads (Figure 6). Primary radial ribs producing small crenulations at postero-ventral margin (Figure 7). Inner shell surface whitish and brilliant, outer shell sculpture showing through. Internal septum relatively large, extending for about 1/4 total shell length, with markedly curved anterior margin.

Type Locality: 70° 8' 12" S, 84° 51' 41" W, Bellingshausen Sea, Antarctica, 603 m (Figure 8).

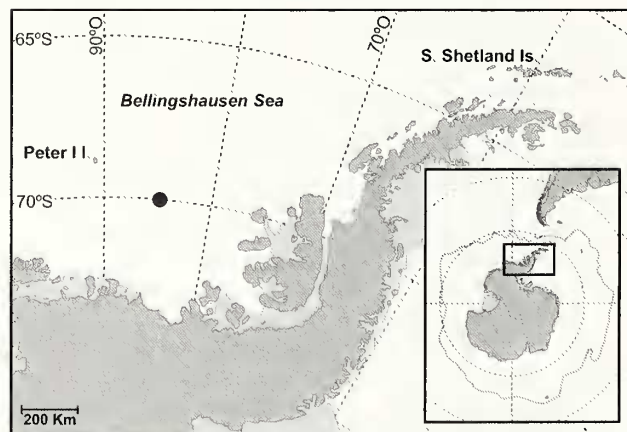


Figure 8. Location map showing the type locality of *Zeidora antarctica* new species (•).

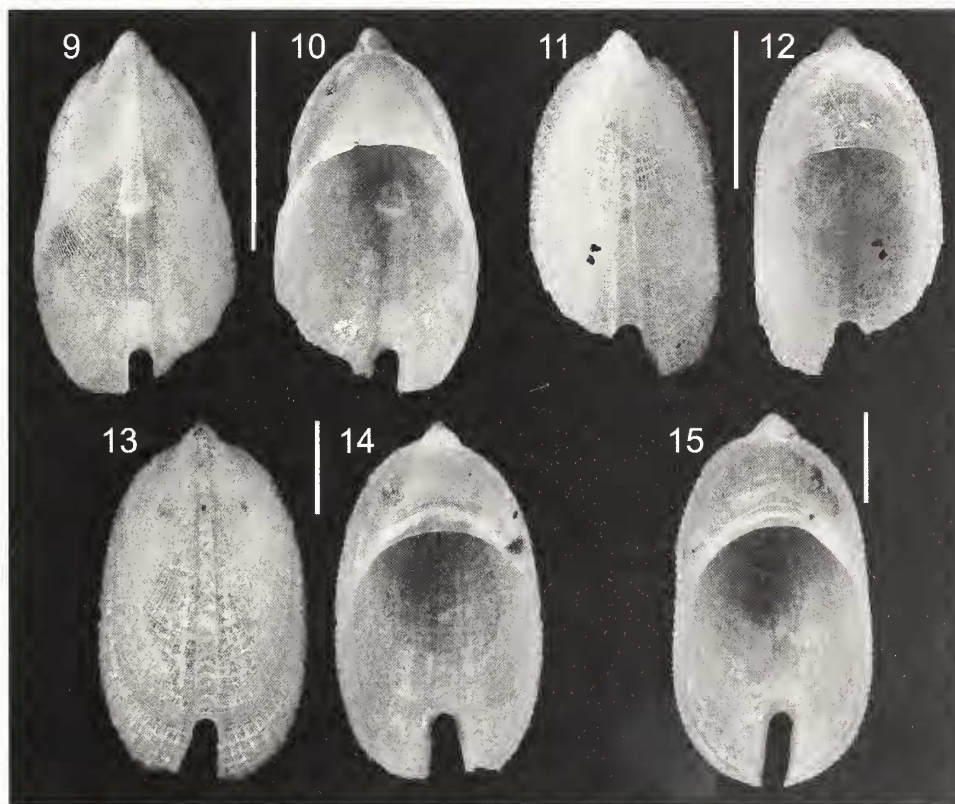
Type Material: Holotype, MNCN 15.05/53569, measurements in Table 1.

Distribution: Only known from the type locality.

Table 1. Living species of *Zeidora*. Provinces and measurements (L, length; W, width; H, height) of their types (h = holotype; p = paratypes).

| Species | Type locality | Depth (m) | Measurements (L × W × H, in mm) |
|--|--------------------------------------|-----------|--|
| <i>Z. antarctica</i> new species | Bellinghansen Sea, Antarctica | 603 | 16.2 × 8.9 × 4.7 (h) |
| <i>Z. bahamondei</i> Rehder, 1980 | Vaihu, Easter Island | ? | 5.2 × 3.1 × 1.3 (h) 4.2 × 2.9 × 1.2 (p) |
| <i>Z. bigelowi</i> Pérez-Farfante, 1947 | Cochinos Bay, Cuba | 320-412 | 2.5 × 1.5 × 1.0 (h) |
| <i>Z. calceolina</i> A. Adams, 1860 | Straits of Korea, Japan | 115 | 4.0 × ? × ? (h) |
| <i>Z. flabellum</i> (Dall, 1896) | Off Clarion Island, Lower California | 841 | 10.0 × ? × 2.5 (h) |
| <i>Z. galapagensis</i> (McLean, 1970) | Isla Isabela, Galapagos | 146-183 | 5.5 × 3.3 × 1.7 (h) |
| <i>Z. lodderae</i> (Tate and May, 1900) | Tasmania | ? | 10.0 × 6.4 × 2.8 (h) |
| <i>Z. maoria</i> Powell, 1936 | Off Three King Island, New Zealand | 260 | 2.9 × 1.4 × 0.9 (h) |
| <i>Z. milerai</i> Espinosa, Ortea and Fernández-Garcés, 2004 | Rancho Luna Beach, Cienfuegos, Cuba | 28 | 3.5 × 2.1 × 1.4 (h) |
| <i>Z. naufraga</i> Watson, 1883 | North of Culebra Island | 713 | 9.7 × 5.1 × 3.0 (h) |
| <i>Z. neritica</i> Espinosa, Ortea and Fernández-Garcés, 2004 | Vista del Mar Beach, Habana, Cuba | 18 | 2.5 × 1.6 × 0.9 (h) |
| <i>Z. nesta</i> (Pilsbry, 1890) | Red Sea | ? | 5.5 × 3.0 × 1.3 (h) |
| <i>Z. reticulata</i> A. Adams, 1862 | Mino-Sima, Japan | ? | 4.0 × 2.4 × ? ⁽¹⁾ 4.2 × 2.3 × ? ⁽¹⁾ |
| <i>Z. tasmanica</i> (Beddome, 1883) | Kelso Bay, Tasmania | 31 | 5.0 × 3.0 × 0.8 (h) |

⁽¹⁾ A single vial containing two specimens of *Z. reticulata* is housed at the NIIMUK. One of these specimens is the holotype, and the other -coming from Cuming collection- it is not a type; however, there is no way of knowing which specimen is which.



Figures 9–15. *Zeidora* species. **9–10.** Holotype of *Z. naufraga* (NHMUK 1887.2.9.128). **11–12.** Paratype of *Z. maoria* (NIIMUK 1962954). **13–15.** Holotype and another specimen of *Z. reticulata* (NHMUK 1878.1.28.150). Scale bars: Figures 9–10 = 5 mm, 11–15 = 1 mm.

Etymology: The species is named after the geographic area where the specimen was collected.

Remarks: *Zeidora antarctica* new species closely resembles *Z. naufraga* (Figures 9–10), *Z. maoria* (Figures 11–12), and *Z. reticulata* (Figures 13–15) in general shell outline and sculpture. However, in these species the spire is larger and more markedly extending past the posterior margin of shell, even when these specimens are smaller in size. In addition, *Z. naufraga* and *Z. maoria* have a less concave anterior margin of septum than *Z. antarctica*; *Z. naufraga* has a shorter and wider slit; and *Z. reticulata* has a larger posterior margin and stronger keels surrounding the selenizone. Furthermore, the shell sculpture in *Z. maoria* and *Z. reticulata* produces rectangular interspaces, while in *Z. antarctica* interspaces are squarish.

Regarding the other living species of the genus, *Zeidora antarctica* differs from *Z. bahamondei*, *Z. lodderae*, and *Z. tasmanica* by having a longer and narrower shell outline; from *Z. calceolina* by having delicate shell sculpture; and from *Z. nesta*, *Z. flabellum*, *Z. galapagensis*, *Z. bahamondei*, *Z. milerai*, *Z. neritica*, and *Z. bigelowi* by having a wider septum. *Z. antarctica* also is distinguished from any other species by its extremely large size and allopatric geographical distribution (Table 1), since the new species described here provides the first record for the genus in Antarctic waters.

Thiele (1929) divided *Zeidora* in two subgenera: *Zeidora sensu stricto* and *Nesta*. H. Adams, 1870, a criterion subsequently followed by Wenz (1938), Keen (1960), and Herbert (1987). The presence of a broad septum in *Zeidora antarctica*, clearly placed this species in the nominotypic subgenus.

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